list

ATTACHMENT A

Summary of the Housatonic River Floodplain User Survey and Its Application to the HHRA

This summary describes the design, implementation, and results of the Housatonic River Floodplain User Survey (HRFUS), which was designed and conducted by Triangle Economic Research (TER) at the request of the General Electric Company (GE). The HRFUS was an intensive observational survey that covered a six-month period between April 29 and October 31, 2002. Its objective was to collect site-specific empirical data on recreational use of the Housatonic River floodplain for consideration in the U.S. Environmental Protection Agency's (EPA's) Human Health Risk Assessment (HHRA) of the Housatonic River. Observations in certain Exposure Areas (EAs) within the floodplain occurred nearly every day, and certain areas were visited multiple times during a survey day. A full report on the HRFUS was prepared by TER (2003) and submitted to EPA in January 2003. The full report is available from GE on request.

Study Area and Scope

The Study Area for the HRFUS included the floodplain of a 10-mile reach of the Housatonic River between the confluence of the East and West Branches of the River and Woods Pond Dam. Consistent with the HHRA, the floodplain was considered to extend laterally from the River to the approximate 1 ppm isopleth for PCBs in floodplain soils. As discussed further below, the HRFUS included observations in almost all the EAs located above Woods Pond Dam that have been identified in the HHRA as subject to any type of recreational use scenario. While the HHRA evaluates only those portions of the EAs that lie within the 1 ppm isopleth, the HRFUS, to be conservative, included reports of all observed recreational-use visits within a given EA, regardless of whether they were within or outside the 1 ppm isopleth (except for certain car-based observations of vehicles that were screened out due to observed or likely activities outside the floodplain, as explained below). Given that the HRFUS was focused on recreational use of the floodplain, it was limited to floodplain and riverbank areas that potentially could be used for recreational purposes. Thus, the data collected did not include either: (a) non-recreational activities (e.g., utilities workers) or areas designated for non-recreational use (e.g., Pittsfield Wastewater Treatment Plant); or (b) use of the River itself (e.g., observations of boating or canoeing activities).

The survey sites for this study included almost all the floodplain within the Study Area that was accessible to the public. All of the easements and trails were included, as were all of the riverbanks. Almost 20 areas where users are known to park cars were also included. In all, 57 of the 60 EAs above Woods Pond Dam identified in the HHRA as subject to one or more recreational use scenarios were covered in this survey. The three EAs that were not included in the HRFUS (EAs 3, 14 and 15) were inaccessible from existing trails/easements, did not border the River, and were not associated with an established parking area. These EAs consisted of a residential home (EA 3), a parcel owned by Miss Hall's School (EA 14), and an isolated one-acre parcel owned by the Commonwealth of Massachusetts (EA 15).

Study Methodology

Survey data were collected from April 29, 2002 to October 31, 2002, using three data collection methods: roving car-based counts for access points and parking areas; roving-walking counts for utility easements and trails and adjacent areas; and canoe-based counts for the riverbanks. The roving car-based counts consisted of a counter driving to or within sections of the Study Area to collect information on recreators who parked vehicles in the Study Area. The roving-walking counts consisted of a team of counters walking the trails/easements in the Study Area to collect information on recreators using those trails/easements and the adjacent areas. The canoe-based counts consisted of a team of counters traveling by canoe through the Study Area to collect data on recreators using the riverbanks. Figure 1 shows each of the survey sites for the car-, walking-, and canoe-based counts.

During the April through October survey period, there were 300 unique sampling events, as shown in Table 1. Sixty percent of the sampling events were walking counts, 20 percent were car-based counts, and 20 percent were canoe-based counts. For each count type, the selection of counting events was stratified by day type (i.e., weekend/holidays versus weekdays). During this study period (186 days), counts occurred on all but four days. Walking counts were made on 178 days, and the car-based and canoe-based counts were each made on 60 randomly selected days. Frequently, two counts occurred on the same day. On average, the counts lasted about 4 to 6 hours. Starting times for each count were randomly selected among daylight hours so that the collected data reflected usage throughout different times of the day.

Car-Based Counts. On car-based count days, the counter completed four counting runs (a run constituted one visit to each of the 19 parking sites). The parking sites that the counter visited

included official and unofficial parking areas, including shoulders along the road where recreators are known to park their vehicles when accessing the River and its floodplain. The counter visited each of the parking sites in an approximately one-hour period, and repeated this route four times within the four-hour survey period. Although the route that the counters traveled from site to site was constant throughout the study, the starting site and starting time for each count were randomly selected.

Car-based counters recorded the following primary information:

- The presence of parked vehicles at the parking sites;
- Information on each parked vehicle, including the color, make, model, license plate number, and any distinctive markings;
- For each vehicle, any indication of the recreator's chosen activity, given the vehicle's amenities (e.g., boat rack) or proximity of a recreational activity to the vehicle (e.g., if a recreator was observed fishing next to a parked truck, the counter would record fishing as the activity associated with that truck); and
- The total number of parked vehicles during each count run.

Roving Walking Counts. The walking counts obtained data in areas between the access points addressed by the car-based counts and the riverbanks addressed by the canoe-based counts. The walking counters observed individuals whom the car-based and canoe-based count teams may not have seen. Furthermore, the walking counters collected data on recreational activities that take place on trails/easements and adjacent areas. Each counting event consisted of two individuals walking seven trails/easements in the floodplain and recording information on recreators they observed at these locations and adjacent areas. In order to maintain uniform sampling periods among survey components, a roving-walking sampling event lasted approximately four hours. The sampling event began at a randomly selected site and continued until all walking sites were surveyed. If the counters walked an entire trail or easement in less than the allotted time, they continued roving the trail or easement for the entire four-hour time period. Longer easements were divided into smaller pieces to make sure that the counters observed all portions. Each walking site was walked twice during a counting event with the counters walking the length of the trail/easements, turning around at the end and returning to the original starting point.

The walking counts occurred on 178 days during the 186-day survey period. As with the car-based counts, both the site where the counting began, as well as the starting time, were

randomly selected. During the walking counts, walking counters recorded the following information:

- The presence of any recreators along the trails/easements and adjacent areas;
- The time of each observation of a recreator;
- The location of each observed recreator, using Global Positioning Satellite (GPS) coordinates and including whether the user was actually on a trail, and if not, how far off the trail the user was observed, and the direction relative to the counter (e.g., west);
- Information on each observed recreator, including relative age (adult or child), gender, other individual information (e.g., approximate height and weight, other distinctive characteristics);
- The activity being performed by each observed recreator; and
- The total number of recreators on the trails/easements and adjacent areas during each counting event.

Canoe-Based Counts. The canoe-based counts provided riverbank observations, which were not possible through the car-based or roving-walking count methods. In some cases, the car-based and roving-walking counters were unable to observe recreator activity on the banks of the Housatonic River because of visibility constraints (e.g., dense vegetation). The canoe-based team observed activity at these shoreline sites.

The canoe-based team collected data on the activity of recreators on the shores of the River. The canoe-based team took approximately four hours to travel the length of the study area (canoe sites 1 and 2). On each scheduled canoe-based count day, the canoe-based team traveled the stretch of the Housatonic from Fred Garner Park, just upstream of the Confluence, to the footbridge on the southern edge of Woods Pond. The canoe-based count team traveled this stretch of river every survey day, with a few exceptions when only part of this stretch was surveyed.[1]

The canoe-based counts occurred on 60 days during the 186-day survey period and recorded the following primary information:

[1] On nine days, the canoe-based team only traveled half of the Study Area. On four of these days, the team traveled from the confluence to John Decker Canoe Launch to determine the length of time needed to travel through the northern portion of the Study Area. On the other five of these days, the canoe-based team only traveled from John Decker Canoe Launch to the southern edge of Woods Pond due to low water levels in the upper section of the River.

- The presence of any recreators on the riverbanks;
- The time of each observation of such a recreator;
- The location of each observed recreator, based on GPS coordinates, the recreator's location relative to the River and floodplain, and the recreator's approximate distance from the counter;
- Information on each observed recreator, including relative age (adult or child), gender, other individual information (e.g., approximate height and weight, other distinctive characteristics);
- The activity being performed by each observed recreator; and
- The total number of recreators in the given portion of the riverbanks during each counting run.

Data Processing

Once the data were collected, the data forms were coded and the data entered using a double entry system, and a number of adjustments were made consistent with the goal of the survey. First, the raw observational data were adjusted as necessary to pinpoint the location and EA for each observation recorded. In addition, any recorded users that were not within the recreational purview of the study (e.g., maintenance workers, environmental sampling workers, canoeists, and users observed on residential lawns) were screened out. Finally, the car-based counts were filtered to screen out observations of recreators whose vehicles were observed during these counts but who were observed to be, or determined (based on area-specific characteristics) most likely to be, engaged in activities outside the floodplain, or who were already covered by the walking survey.

Results

Table 2 presents a breakdown of the adjusted (i.e., post-screening) number of visits observed per EA for the entire Study Area. It shows the number of days that each EA was surveyed, the survey method used to record the data, the number of visits observed during all survey days combined (after the adjustments described above), and a breakdown of the nature of the activities observed and the age group involved. Note that all observations listed in this table were of adults except where otherwise noted.

A review of Table 2 shows that the counters observed no or few recreators in a majority of the EAs. No recreator was ever observed in 21 (37%) of the 57 EAs studied, and only one to six

recreator observations were recorded at an additional 20 (35%) of the EAs. These limited observations occurred despite the high intensity sampling. In fact, survey counters visited 70 percent of the EAs on 118 or more days during the 186-day survey period and 40 percent of EAs on 178 or more days.

The remaining 16 EAs had more frequent usage, although only a few had relatively heavy use. Six of these areas had between 9 and 20 observations, three had between 20 and 30 observations, three had between 30 and 40 observations, two had between 40 and 50 observations, and two had more than 50 observations (70 in EA 40 and 198 in EA 60).

Table 2 also lists the vegetation coverage, accessibility, and/or other relevant characteristics of the EAs. In general, the frequency of observed use was consistent with the topography, vegetation, accessibility, and location of the EA. For example, the 41 EAs where there were either no observations or else six or fewer observed visits generally had one or more of the following characteristics: 1) high levels of vegetation or marshland; 2) steep topography; 3) limited access by trail or car; and/or 4) serve a purpose other than recreation. Similarly, the 16 EAs that had more frequent usage generally had characteristics conducive to such use – e.g., walkable trails, proximity to residential or parking areas, and/or proximity to areas that are attractive for specific recreational pursuits (such as walking, running, target shooting, fishing, etc.).

Conclusions

The HRFUS provides extensive information on the levels of recreational use, types of recreational activities, and specific locations used by recreators in the Housatonic River floodplain. The survey results showed no or very few observations of recreators in 41 of the 57 EAs included in this study that have been identified in the HHRA as falling within a recreational exposure scenario. Because the counters were on site for 178 of the 186 days in many areas during the study period, they would have recorded more recreational users if those areas were heavily used. The fact that the observed visits were so low indicates that those areas are, in fact, rarely or infrequently used by recreators. For these areas, the survey results, together with an assessment of the physical features and low accessibility of the areas, indicate that the frequency of use for individual recreators must be very low – most likely no more than a relatively few days per year for an individual recreator.

While the remaining 16 EAs had a greater number of observations in the survey, most of them showed only a modest level of use, and only a few showed higher levels of use. For such areas, it should be kept in mind that the number of total observations in an area is not equivalent to the frequency of use (i.e. repeat visits) by an individual recreator, even an avid one. For example, as discussed in the TER (2003) report, the car-based count data from the survey provide some information on frequency of use because the recorded license plate numbers provided a means of uniquely identifying each car. Figure 2 shows the frequency distribution of all observed cars after the 60 car-based counting events, demonstrating that only a relatively few cars were observed more than once. Moreover, Table 3 shows the total number of observed cars (assumed to represent trips), the number of unique cars (assumed to represent discrete visitors), and the average frequency after 10, 20, 30, 40, 50, and 60 car-based counting events. These data indicate that, as the number of observations increases, the frequency estimates increase only slightly. Together, these results indicate that, even in areas with numerous observed visits and even taking into account the days and times when the counters were not observing these areas, the frequency of visits (i.e. repeat trips per visitor) would not be expected to increase dramatically -- certainly not as high as 90 days per year.

Comparison of HRFUS Results with Exposure Assumptions in the HHRA

The findings of the HRFUS indicate that, in some cases, the selected exposure scenarios and exposure frequencies assigned in the HHRA are consistent with the survey data, but that in other cases the HHRA should be revised to be more in line with the empirical data. For example, there are 27 EAs for which the HHRA assigns an RME exposure frequency of 90 days per year but for which the HRFUS showed either no recreational users or six or fewer total recreational visits over the season, despite the systematic coverage of the survey. These findings indicate that the exposure frequencies assigned to such areas in the HHRA substantially overestimate current use.

We recognize that the HHRA needs to take into account reasonably anticipated future use as well as current use and that such future use could be somewhat higher than current use. However, given the observational data, future use is unlikely to increase to the rate designated in the HHRA for these areas – i.e., 90 days/year. This is particularly true for EAs 5, 7, 13, 23, 24, and 28, which already have existing trails that are currently used by local residents; EAs 11, 13, 16, 17, 18, 19, 20, 21, 33, 35, 49, and 51, which are isolated, remote areas that are not

readily accessible at all; and EAs 10, 32, 41, 43, and 49, to which access is difficult due to the presence of large wet areas. Moreover, while there are some restrictions related to some forms of recreational activity (e.g., fish may be caught, but not consumed), there are no current restrictions on any of the forms of recreational use itself observed in the floodplain.

In addition, there are a number of EAs for which the HHRA designates particular exposure scenarios but at which the HRFUS recorded no observations of those types of activities. These EAs are discussed further in Attachment B to these comments.

Table 4 provides a comparison of the HRFUS observations with the exposure scenarios and frequencies in the HHRA. This table identifies a number of EAs where we believe that the exposure frequencies and/or exposure scenarios in the HHRA should be revised.

Reference

TER. 2003. *Housatonic River Floodplain User Survey Summary Report*. Triangle Economic Research, Research Triangle, NC. January 2003.

Table 1
Survey Schedule

Date	Car Count	Walking Count	Canoe Count
29-Apr	X	X	
30-Apr		X	X
1-May		X	
2-May		X	
3-May	X	X	
4-May	X	X	
5-May		X	X
6-May		X	X
7-May		X	X
8-May		X	
9-May	X	X	
10-May	X	X	
11-May	X	X	
12-May		X	X
13-May		X	
14-May	X	X	
15-May	X	X	
16-May		X	X
17-May		X	
18-May		X	X
19-May		X	X
20-May		X	
21-May		X	
22-May			
23-May		X	X
24-May		X	
25-May		X	X
26-May	X	X	
27-May		X	X
28-May		X	
29-May			X
30-May		X	
31-May		X	

Date	Car Count	Walking Count	Canoe Count
1-Jun		X	X
2-Jun	X	X	
3-Jun		X	
4-Jun		X	
5-Jun		X	
6-Jun		X	
7-Jun		X	
8-Jun		X	X
9-Jun		X	
10-Jun		X	X
11-Jun		X	X
12-Jun			
13-Jun		X	X
14-Jun		X	
15-Jun	X	X	
16-Jun		X	X
17-Jun		X	
18-Jun		X	X
19-Jun	X	X	
20-Jun		X	
21-Jun	X	X	
22-Jun	X	X	
23-Jun	X	X	
24-Jun			X
25-Jun		X	
26-Jun	X	X	
27-Jun			
28-Jun	X	X	
29-Jun	X	X	
30-Jun	X	X	X

Date	Car Count	Walking Count	Canoe Count
1-Jul		X	X
2-Jul	X	X	
3-Jul		X	X
4-Jul	X	X	
5-Jul		X	
6-Jul		X	X
7-Jul	X	X	
8-Jul		X	
9-Jul		X	X
10-Jul		X	X
11-Jul		X	
12-Jul	X	X	
13-Jul	X	X	
14-Jul		X	X
15-Jul		X	
16-Jul	X	X	
17-Jul		X	
18-Jul		X	
19-Jul		X	
20-Jul		X	X
21-Jul		X	X
22-Jul	X	X	
23-Jul		X	
24-Jul	X	X	
25-Jul		X	X
26-Jul		X	
27-Jul		X	X
28-Jul		X	X
29-Jul		X	X
30-Jul			X
31-Jul		X	

Table 1
Survey Schedule, continued

Date	Car Count	Walking Count	Canoe Count
1-Aug		X	X
2-Aug		X	X
3-Aug	X	X	
4-Aug		X	X
5-Aug		X	
6-Aug		X	
7-Aug		X	
8-Aug	X	X	
9-Aug		X	X
10-Aug	X	X	
11-Aug	X	X	
12-Aug		X	
13-Aug		X	
14-Aug		X	X
15-Aug	X	X	
16-Aug		X	
17-Aug	X	X	
18-Aug		X	X
19-Aug		X	
20-Aug		X	
21-Aug		X	
22-Aug		X	X
23-Aug		X	
24-Aug	X	X	
25-Aug	X	X	
26-Aug	X	X	
27-Aug		X	
28-Aug		X	
29-Aug		X	X
30-Aug	X	X	
31-Aug	X	X	

Date	Car Count	Walking Count	Canoe Count
1-Sep	X	X	
2-Sep	X	X	
3-Sep	X	X	
4-Sep	X	X	
5-Sep	X	X	
6-Sep	X	X	
7-Sep		X	X
8-Sep		X	X
9-Sep		X	X
10-Sep	X	X	
11-Sep		X	
12-Sep	X	X	
13-Sep		X	X
14-Sep		X	X
15-Sep		X	
16-Sep		X	
17-Sep		X	
18-Sep	X	X	
19-Sep		X	
20-Sep		X	X
21-Sep	X	X	
22-Sep		X	X
23-Sep		X	X
24-Sep		X	
25-Sep	X	X	
26-Sep		X	X
27-Sep		X	
28-Sep	X	X	X
29-Sep		X	X
30-Sep	X	X	

Date	Car Count	Walking Count	Canoe Count
1-Oct		X	
2-Oct		X	
3-Oct		X	
4-Oct		X	
5-Oct		X	X
6-Oct	X	X	
7-Oct	X	X	
8-Oct	X	X	
9-Oct		X	X
10-Oct	X	X	
11-Oct		X	
12-Oct		X	X
13-Oct		X	X
14-Oct	X	X	
15-Oct	X	X	
16-Oct		X	
17-Oct			
18-Oct		X	
19-Oct	X	X	
20-Oct	X	X	
21-Oct		X	X
22-Oct		X	
23-Oct		X	
24-Oct		X	
25-Oct		X	
26-Oct		X	X
27-Oct		X	X
28-Oct	X		
29-Oct		X	
30-Oct		X	
31-Oct		X	

Table 2. Number of Observed Visits, Types of Activities Observed, and Vegetation Coverage and Other Characteristics in Surveyed Exposure Areas

EA	Survey Days	Survey Type	Observed Visits (Adjusted)[a]	Breakdown of Observed Visits	Vegetation Coverage and Other Characteristics of Area
1	181	Canoe Walk	20	Walking/Hiking/Running: (on/off trail) 12 (incl. 1 young child) Fishing (on trail): 1 ATV/Motorcycle Use (off trail): 1 Biking (on trail): 6	▪ Walkable trail, free of vegetation ▪ Regularly used for walking, hiking and running ▪ Young to adult trees
2	181	Canoe Walk	3	Wild crop gathering (on and off trail): 3	▪ Medium thick, adult-aged forest with thick underbrush and fern growth ▪ Short walkable trail (~300 ft) in northwest corner
4	178	Walk	14	Walking/Hiking/Running (on trail): 6 (incl. 2 older children) ATV/Motorcycle Use (on trail): 3 (incl. 2 young children & 1 older child) Wild crop gathering (on trail): 1 General recreation (on trail): 4 (incl. 1 young child)	▪ Entire EA consists of an easily walkable trail ▪ Accessible from nearby residences and Pomeroy Avenue
5	181	Canoe Walk	1	Walking/Hiking/Running (off trail): 1 (incl. 1 older child)	▪ Medium to adult-aged forest with downed trees and thick 10’ tall shrub and brush ▪ Slopes up to residential lawns
6	60	Canoe	0	No observed visits	▪ Medium to thick, adult-aged forest with thin to medium thick underbrush and grasses
7	181	Canoe Walk	2	General recreation (off trail): 2	▪ Dense, adult-aged forest with very thick underbrush, 4' tall goldenrod and weeds
8	60	Canoe	0	No observed visits	▪ Medium to thick, adult-aged forest with 4-7' tall underbrush and grasses
9	60	Canoe	0	No observed visits	▪ Thin to medium thick, adult-aged forest ▪ Steep slope down to river with thin underbrush
10	60	Canoe	0	No observations	▪ Thick, adult-aged forest with very thick underbrush and vines on rivers edge
11	181	Canoe Walk	0	No observed visits	▪ Thick, medium to adult-aged forest with thick 3-7' tall underbrush and weeds

Table 2. Number of Observed Visits, Types of Activities Observed, and Vegetation Coverage and Other Characteristics in Surveyed Exposure Areas

EA	Survey Days	Survey Type	Observed Visits (Adjusted)[a]	Breakdown of Observed Visits	Vegetation Coverage and Other Characteristics of Area
12	181	Canoe Walk	49	Walking/Hiking/Running (on trail): 29 (incl. 2 young children & 2 older children) ATV/Motorcycle use (on trail): 9 Biking (on trail): 9 (incl. 1 older child) General recreation (on trail): 1 Farming (on trail): 1	▪ Entire EA consists of an easily walkable trail from Holmes Road to Utility Road ▪ Accessible from roads and nearby residences
13	181	Canoe Walk	0	No observed visits	▪ Thin, adult-aged forest with 6' tall goldenrod and sparse brush
16	181	Canoe Walk	0	No observed visits	▪ Medium to thick, adult-aged forest with thick underbrush, vines and goldenrod
17	181	Canoe Walk	0	No observed visits	▪ Thin, adult-aged forest with thick 6-10' tall brush and vines
18	60	Canoe	0	No observed visits	▪ Thick, adult-aged forest with thin underbrush and thick grasses ▪ Marshy area
19	181	Canoe Walk	0	No observed visits	▪ Thin, adult-aged forest with thick 6-10' tall brush and vines ▪ Marshy area ▪ Worn path through 4-6' tall medium thick weeds and raspberries near river's edge
20	181	Canoe Walk	2	Walking/Hiking/Running (on trail): 2	▪ Short walkable trail (~400 ft) on northern edge of EA ▪ Thin, adult-aged forest with thin underbrush ▪ Marshy area
21	60	Canoe	0	No observed visits	▪ Small section of maintained farm field
22	181	Canoe Walk	0	No observed visits	▪ Medium to thick, medium-aged forest along river
23	178	Walk	1	General recreation (off trail): 1	▪ Narrow strip between trail (EA 12) and river ▪ Thin, medium-aged forest
24	181	Canoe Walk	1	General recreation (off trail): 1	▪ Thin, medium to adult-aged forest ▪ Field cover outside floodplain
25	60	Canoe	1	Walking/Hiking/Running: 1	▪ Medium to thick, medium-aged forest with sparse underbrush

Table 2. Number of Observed Visits, Types of Activities Observed, and Vegetation Coverage and Other Characteristics in Surveyed Exposure Areas

EA	Survey Days	Survey Type	Observed Visits (Adjusted)[a]	Breakdown of Observed Visits	Vegetation Coverage and Other Characteristics of Area
26	182	Canoe Car Walk	45	Walking/Hiking/Running (on/off trail): 11 (incl. 1 older child) ATV Motorcycle use (on/off trail): 7 (incl. 1 older child) General recreation (on and off trail): 12 Hunting (off trail): 8 Paintball (on trail): 2 Horseback riding (off trail): 2 Farming (off trail): 3	▪ Walkable trail network used for walking, hiking, running and ATV/dirt biking outside floodplain ▪ Accessible from road via adjacent trails ▪ Some area of open fields currently under cultivation ▪ Medium to thick, medium-aged forest
27	60	Canoe	0	No observed visits	▪ Thin, medium-aged forest with grasses and 4-7' tall medium to thick brush ▪ Walkable trails from residential neighborhood
28	60	Canoe	1	Walking/Hiking/Running: 1 (incl. 1 young child)	▪ Short walkable trail (~75 ft) in northwest corner ▪ 4-6' tall grass and weeds, sparse trees ▪ Access to river
29	60	Canoe	0	No observed visits	▪ Small open area along river- short 1' tall grass and weeds
30	60	Canoe	0	No observed visits	▪ Thin, medium to adult-aged forest with short 1' tall grass and weeds
31	118	Canoe Car	6	Walking/Hiking/Running: 1 General recreation: 5	▪ Medium/thick adult forest ▪ Thick underbrush and vines ▪ Transected by short walkable trail (~300 ft)
32	118	Canoe Car	4	Walking/Hiking/Running: 3 General recreation: 1	▪ Medium thick, young to medium aged forest ▪ Thick 3-5' tall underbrush and vines
33	181	Canoe Walk	2	Hunting (off trail): 1 General recreation (off trail): 1	▪ Pittsfield wastewater treatment facility ▪ Short grass, weeds and sparse Purple Loosestrife
34	60	Canoe	0	No observed visits	▪ Medium to thick 3-5' tall underbrush ▪ Maintained farm field
35	181	Canoe Walk	2	Walking/Hiking/Running (off trail): 1 Bird watching (on trail): 1	▪ Open field to forest edge ▪ Medium to thick, young to adult-aged forest with thick brush surrounding open field and 10' tall brush on river edge ▪ Marshy area
36	181	Canoe Walk	0	No observed visits	▪ Commercial/industrial land (EPRI facility)

Table 2. Number of Observed Visits, Types of Activities Observed, and Vegetation Coverage and Other Characteristics in Surveyed Exposure Areas

EA	Survey Days	Survey Type	Observed Visits (Adjusted)[a]	Breakdown of Observed Visits	Vegetation Coverage and Other Characteristics of Area
37	182	Canoe Car Walk	36	Walking/Hiking/Running (on/off trail): 10 Hunting (on/off trail): 19 (incl. 1 older child) Horseback riding (on trail): 2 General recreation (on trail): 5	▪ Walkable trail ▪ Trails for horseback riding ▪ Contains open field that is attractive for hunting outside floodplain ▪ Thick adult forest
38	118	Canoe Car	6	Walking/Hiking/Running: 5 Bird watching: 1	▪ Spots of thick brush/forest, weeds and grasses ▪ Farm field in southeast corner outside floodplain
39	181	Canoe Walk	12	Walking/Hiking/Running (on trail): 1 Fishing (on trail): 8 (incl. 1 older child) Bird watching (on trail): 1 Hunting (off trail): 2	▪ Decker Canoe Launch area ▪ Walkable trail along edge of river ▪ 4-6’ tall goldenrod, purple loosestrife and weeds
40	181	Canoe Walk	70	Walking/Hiking/Running (on/off trail): 15 (incl. 2 older children) Hunting (on/off trail): 17 Bow Shooting Tournament (on/off trail): 22 (incl. 2 young children & 4 older children) General recreation (on/off trail): 13 Fishing (on trail): 3	▪ Easily walkable trail leading to an open field near river ▪ Accessible from New Lenox Road and the Lenox Sportsmen’s Club ▪ Mowed and unmowed fields ▪ Thin to medium thick 5-10' tall brush
41	181	Canoe Walk	0	No observed visits	▪ Old pasture land (former DeVos Farm property now owned by GE)
42	118	Canoe Car	6	Walking/Hiking/Running: 1 Bird watching: 1 General recreation: 4	▪ Trail from road to small open clearing edged by 6-10' tall, very thick shrubs and 6-10’ brush covering majority of EA with few trees
43	60	Canoe	1	Walking/Hiking/Running: 1	▪ Residential property with cleared trail down to river ▪ Thin to medium thick 5-10' tall brush with ferns and grasses
44	60	Canoe	1	Walking/Hiking/Running: 1	▪ Open coniferous forest with thick brush along river ▪ Walkable trail to and along river edge

Table 2. Number of Observed Visits, Types of Activities Observed, and Vegetation Coverage and Other Characteristics in Surveyed Exposure Areas

EA	Survey Days	Survey Type	Observed Visits (Adjusted)[a]	Breakdown of Observed Visits	Vegetation Coverage and Other Characteristics of Area
45	118	Canoe Car	11	Walking/Hiking/Running: 6 General recreation: 5	▪ Garden area along road outside floodplain ▪ Access and parking available along October Mountain Road ▪ Thin, mixed forest with thin underbrush and thick brush along river
46	118	Canoe Car	5	Hunting: 2 General recreation: 3	▪ Thin, mixed forest with thin underbrush and thick brush along river ▪ Faint trail along edge of backwater
47	118	Canoe Car	4	Walking/Hiking/Running: 3 General recreation: 1	▪ Walkable trail provides access to river ▪ 5-8' tall brush with downed trees and 3-8' tall underbrush to marsh/backwater
48	118	Canoe Car	9	Walking/Hiking/Running: 4 Hunting: 1 General recreation: 4	▪ Access from October Mountain Road ▪ Steep slope to floodplain ▪ Thick adult-aged forest with thin underbrush and weeds
49	60	Canoe	0	No observed visits	▪ Thin, adult-aged forest with tall brush ▪ No access by trail or road
50	60	Canoe	0	No observed visits	▪ Thin, medium-aged forest ▪ Marshy area ▪ No access by trail or road
51	60	Canoe	0	No observed visits	▪ Thick 6' tall cattails mixed with thin to medium thick 6' tall brush ▪ No access by trail or road
52	118	Canoe Car	3	Walking/Hiking/Running: 2 Fishing: 1	▪ Walkable trail provides access to river ▪ 5-8' tall brush with downed trees
53	118	Canoe Car	26	Walking/Hiking/Running: 4 Fishing: 4 Hunting: 12 General recreation: 6	▪ Walkable trail provides access to river ▪ Small boat/canoe and walking access from road
54	118	Canoe Car	9	Walking/Hiking/Running: 1 Fishing: 1 General recreation: 7	▪ Access from October Mountain Road ▪ Medium thick adult forest ▪ Moderately steep slope to floodplain

Table 2. Number of Observed Visits, Types of Activities Observed, and Vegetation Coverage and Other Characteristics in Surveyed Exposure Areas

EA	Survey Days	Survey Type	Observed Visits (Adjusted)[a]	Breakdown of Observed Visits	Vegetation Coverage and Other Characteristics of Area
55	118	Canoe Car	28	Walking/Hiking/Running: 12 Picnicking: 3 (incl. 1 young child) General recreation: 13	▪ Access from October Mountain Road ▪ Sparse adult trees with thin to no underbrush
56	118	Canoe Car	2	Biking: 2 (2 older children)	▪ Thin, young to medium-aged forest with very thick 6-10' tall brush ▪ Marshy area
57	118	Canoe Car	31	Walking/Hiking/Running: 24 (incl. 1 young child) Fishing: 2 Bird watching: 1 General recreation: 4	▪ Access from road along shore of Woods Pond ▪ Adult forest with little to no underbrush
58	118	Canoe Car	25	Walking/Hiking/Running: 7 Fishing: 3 ATV/Motorcycle use: 6 General recreation: 9	▪ Access from road along shore of Woods Pond ▪ Sparse adult trees
59	118	Canoe Car	34	Walking/Hiking/Running: 15 (incl. 2 young children) Fishing: 7 Hunting: 2 Bird watching: 1 General recreation: 9	▪ Access from road along shore of Woods Pond ▪ Located on eastern edge of footbridge at southern end of Woods Pond ▪ Adult forest with little to no underbrush
60	118	Canoe Car	198	Walking/Hiking/Running: 102 (incl. 4 young children) ATV/Motorcycle use: 2 Biking: 2 Fishing: 10 Bird watching: 2 General recreation: 80	▪ Access from road ▪ Located on western edge of footbridge at southern end of Woods Pond ▪ Small boat/canoe launch area ▪ Parking available

Table 3
Cumulative Totals from Car Data

Number of Sample Periods	Sample Period Dates	Total Cars Observed (Trips)	Unique Cars Observed (Visitors)[a]	Average Frequency (Trips per Visitor)
10	4/29 – 6/2	48	45	1.07
20	4/29 – 7/2	107	100	1.07
30	4/29 – 8/10	176	163	1.08
40	4/29 – 9/2	252	225	1.12
50	4/29 – 9/28	291	250	1.16
60	4/29 – 10/28[b]	403	338	1.19

Source: Figure 4.1, TER (2003)

Notes:

[a] One visitor (person) per car is assumed.
[b] The last car count was administered on October 28.

Table 4. Comparison of HRFUS Observations with Current Use Scenarios and Frequencies in the HHRA

EA	Survey Days	Observed Visits	Observed Activities	Age groups	Current Use Scenarios in HHRA	Frequency in HHRA (days/year), RME/CTE	Comments
1	181	20	Walking/hiking/running, fishing, ATV/biking.	19 adults, 1 child	General recreation	30/15	
2	181	3	Wild crop gathering	Adults	General recreation	30/15	
4	178	14	Walking/hiking/running, ATV/motorcycle, wild crop gathering, general recreation	10 adults, 3 older children, 2 younger children	General recreation	90/30	
5	181	1	Walking/hiking/running	Older child	General recreation	90/30	Frequency not consistent with observations (1 in 181 days)
6	60	0	None	None	General recreation	30/15	
7	181	2	General recreation	Adults	General recreation	90/30	Frequency not consistent with observations (2 in 181 days)
8	60	0	None	None	Recreational canoeist	60/30	
9	60	0	None	None	General recreation	90/30	Frequency not consistent with observations (none in 60 days)
10	60	0	None	None	General recreation	90/30	Frequency not consistent with observations (none in 60 days)
11	181	0	None	None	General recreation	90/30	Frequency not consistent with observations (none in 181 days)
12	181	49	Walking/hiking/running, ATV/Motorcycle, biking, general recreation, farming	No	General recreation	90/30	
13	181	0	None	None	General recreation	90/30	Frequency not consistent with observations (none in 181 days)
16	181	0	None	None	General recreation	90/30	Frequency not consistent with observations (none in 181 days)
17	181	0	None	None	General recreation	90/30	Frequency not consistent with observations (none in 181 days)
18	60	0	None	None	General recreation, future residential	90/30	Frequency not consistent with observations (none in 60 days)

Table 4. Comparison of HRFUS Observations with Current Use Scenarios and Frequencies in the HHRA

EA	Survey Days	Observed Visits	Observed Activities	Age groups	Current Use Scenarios in HHRA	Frequency in HHRA (days/year), RME/CTE	Comments
19	181	0	None	None	General recreation	90/30	Frequency not consistent with observations (none in 181 days)
20	181	2	Walking/hiking/running	Adult	General recreation	90/30	Frequency not consistent with observations (2 in 181 days)
21	60	0	None	None	Farming	10/10	
22	181	0	None	None	General recreation, ATV/dirt biking	90/30	Frequency not consistent with observations (none in 181 days)
23	178	1	General recreation	Adult	General recreation	90/30	Frequency not consistent with observations (1 in 178 days)
24	181	1	General recreation	Adult	General recreation	90/30	Frequency not consistent with observations (1 in 181 days)
25	60	1	Walking/hiking/running	Yes	General recreation	90/30	Frequency not consistent with observations (1 in 60 days)
26	182	45	Walking/hiking/running, ATV/motorcycle use, general recreation, hunting, paintball, horseback riding, farming	43 adults, 2 older children	General recreation, farming	90/30 (rec.), 10/10 (farm)	
27	60	0	None	None	General recreation, ATV/dirt biking	90/30	Frequency not consistent with observations (none in 60 days)
28	60	1	Walking/hiking/running	Young child	General recreation, ATV/dirt biking	90/30	Frequency not consistent with observations (1 in 60 days)
29	60	0	None	None	General recreation	90/30	Frequency not consistent with observations (none in 60 days)
30	60	0	None	None	Residential	90/30	Frequency not consistent with observations (none in 60 days)
31	118	6	Walking/hiking/running, general recreation	Adults	General recreation	90/30	Frequency not consistent with observations (6 in 118 days)

Table 4. Comparison of HRFUS Observations with Current Use Scenarios and Frequencies in the HHRA

EA	Survey Days	Observed Visits	Observed Activities	Age groups	Current Use Scenarios in HHRA	Frequency in HHRA (days/year), RME/CTE	Comments
32	118	4	Walking/hiking/running, general recreation	Adults	General recreation	90/30	Frequency not consistent with observations (4 in 118 days)
33	181	2	Hunting, general recreation	Adults	General recreation	90/30	Frequency not consistent with observations (2 in 181 days)
34	60	0	None	None	Farming	10/10	
35	181	2	Walking/hiking/running, bird watching	Adults	General recreation	90/30	Frequency not consistent with observations (2 in 181 days)
36	181	0	None	None	Grounds-keeper, farming	10/10 (farm), 30/15 (grounds-keeper)	
37	182	36	Walking/hiking/running, hunting, horseback riding, general recreation	35 adults, 1 older child	General recreation, angler	90/30 (rec.), 60/20 (angler)	
38	118	6	Walking/hiking/running, bird watching	Adults	General recreation, angler	90/30 (rec.), 60/20 (angler)	Angler scenario not consistent with observations (no anglers observed); Frequency for recreation not consistent with observations (6 in 118 days)
39	181	12	Walking/hiking/running, fishing, bird watching, hunting	11 adults, 1 older child	Marathon canoeist	150/90	
40	181	70	Walking/hiking/running, hunting, bow shooting tournament, general recreation, fishing	62 adults, 6 older children, 2 young children	General recreation, angler	90/30 (rec.), 60/20 (angler)	
41	181	0	None	None	General recreation, angler	30/15 (rec.), 60/20 (angler)	Angler scenario not consistent with observations (none in 181 days)

Table 4. Comparison of HRFUS Observations with Current Use Scenarios and Frequencies in the HHRA

EA	Survey Days	Observed Visits	Observed Activities	Age groups	Current Use Scenarios in HHRA	Frequency in HHRA (days/year), RME/CTE	Comments
42	118	6	Walking/hiking/running, bird watching, general recreation	Adults	General recreation, angler	90/30 (rec.), 60/20 (angler)	Angler scenario not consistent with observations (none in 118 days); Frequency for recreation not consistent with observations (6 in 118 days)
43	60	1	Walking/hiking/running	Adult	General recreation, angler	90/30 (rec.), 60/20 (angler)	Frequency not consistent with observations (1 in 60 days); Angler scenario not consistent with observations (1 in 60 days)
44	60	1	Walking/hiking/running	Adult	General recreation	90/30	Frequency not consistent with observations (1 in 60 days)
45	118	11	Walking/hiking/running, general recreation	Adults	Waterfowl hunter	48/16	
46	118	5	Hunting, general recreation	Adults	Waterfowl hunter	48/16	Frequency not consistent with observations (5 in 118 days)
47	118	4	Walking/hiking/running, general recreation	Adults	Recreational canoeist	60/30	
48	118	9	Walking/hiking/running, hunting, general recreation	Adults	Waterfowl hunter	48/16	Frequency not consistent with observations (9 in 118 days)
49	60	0	None	None	Waterfowl hunter	48/16	Frequency not consistent with observations (none in 60 days)
50	60	0	None	None	General recreation, waterfowl hunter	30/15 (rec.), 48/16 (hunter)	Frequency not consistent with observations (none in 60 days)
51	60	0	None	None	General recreation, waterfowl hunter	30/15 (rec.), 48/16 (hunter)	Frequency not consistent with observations (none in 60 days)
52	118	3	Walking/hiking/running, fishing	Adults	Recreational canoeist	60/30	
53	118	26	Walking/hiking/running, fishing, hunting, general recreation	Adults	Recreational canoeist	60/30	

Table 4. Comparison of HRFUS Observations with Current Use Scenarios and Frequencies in the HHRA

EA	Survey Days	Observed Visits	Observed Activities	Age groups	Current Use Scenarios in HHRA	Frequency in HHRA (days/year), RME/CTE	Comments
54	118	9	Walking/hiking/running, fishing, general recreation	Adults	Waterfowl hunter	48/16	Frequency not consistent with observations (9 in 118 days)
55	118	28	Walking/hiking/running, picnicking, general recreation	27 adults, 1 young child	General recreation, waterfowl hunter	30/15 (rec.), 48/16 (hunter)	
56	118	2	Biking	Older children	General recreation, waterfowl hunter	30/15 (rec.), 48/16 (hunter)	Frequency not consistent with observations (2 in 118 days)
57	118	31	Walking/hiking/running, fishing, bird watching, general recreation	30 adults, 1 young child	Waterfowl hunter	48/16	
58	118	25	Walking/hiking/running, fishing, ATV/motorcycle use, general recreation	Adults	Angler	60/20	
59	118	34	Walking/hiking/running, fishing, hunting, bird watching, general recreation	32 adults, 2 young children	General recreation, angler	90/30 (rec.), 60/20 (angler)	
60	118	198	Walking/hiking/running, ATV/motorcycle use, biking, fishing, bird watching, general recreation	194 adults, 4 young children	Recreational canoeist, general recreation	90/30 (rec.), 60/30 (rec. canoe)	

Figure 1
Walk, Car, and Canoe Survey Sites

Source: Figure 2.1 from TER (2002

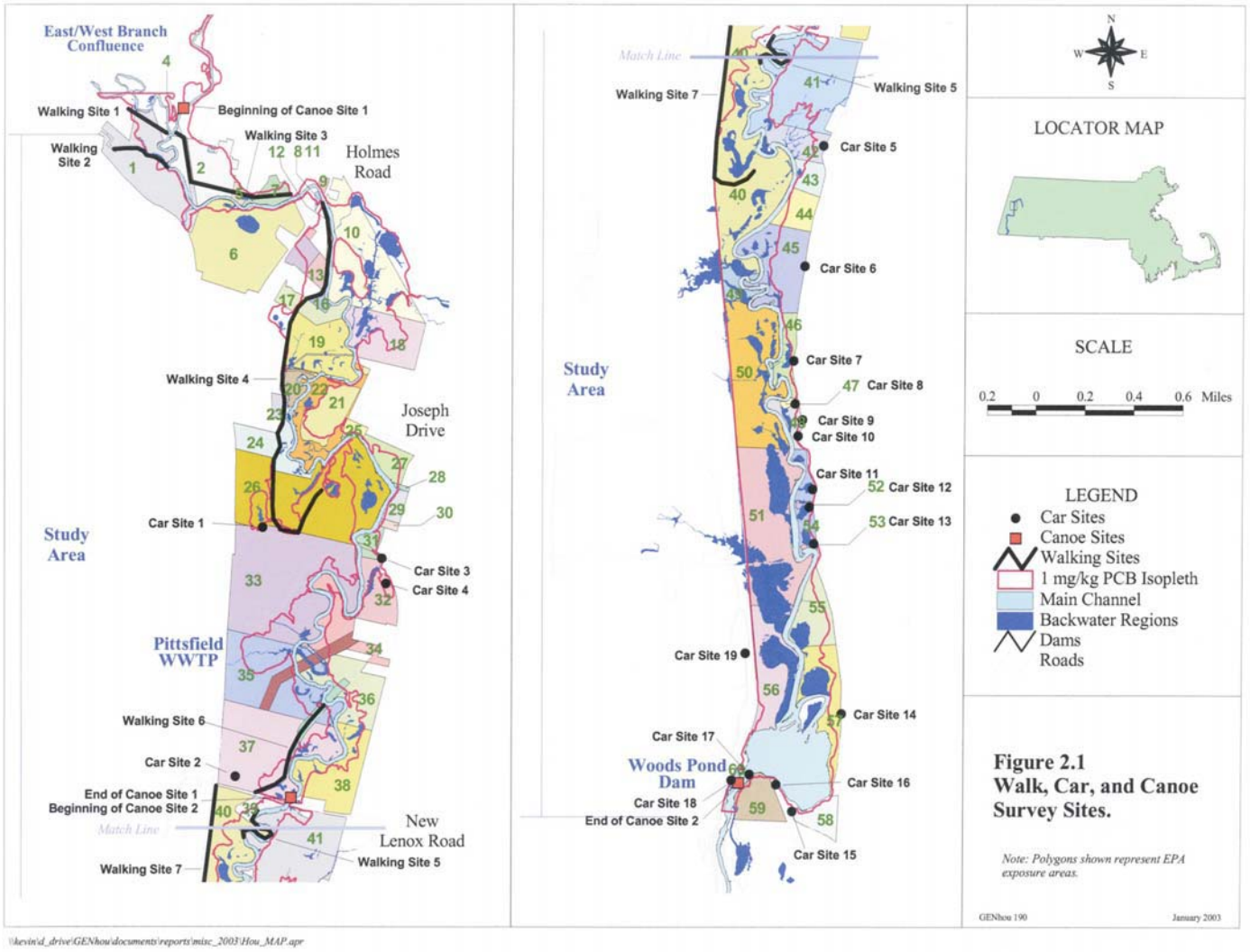

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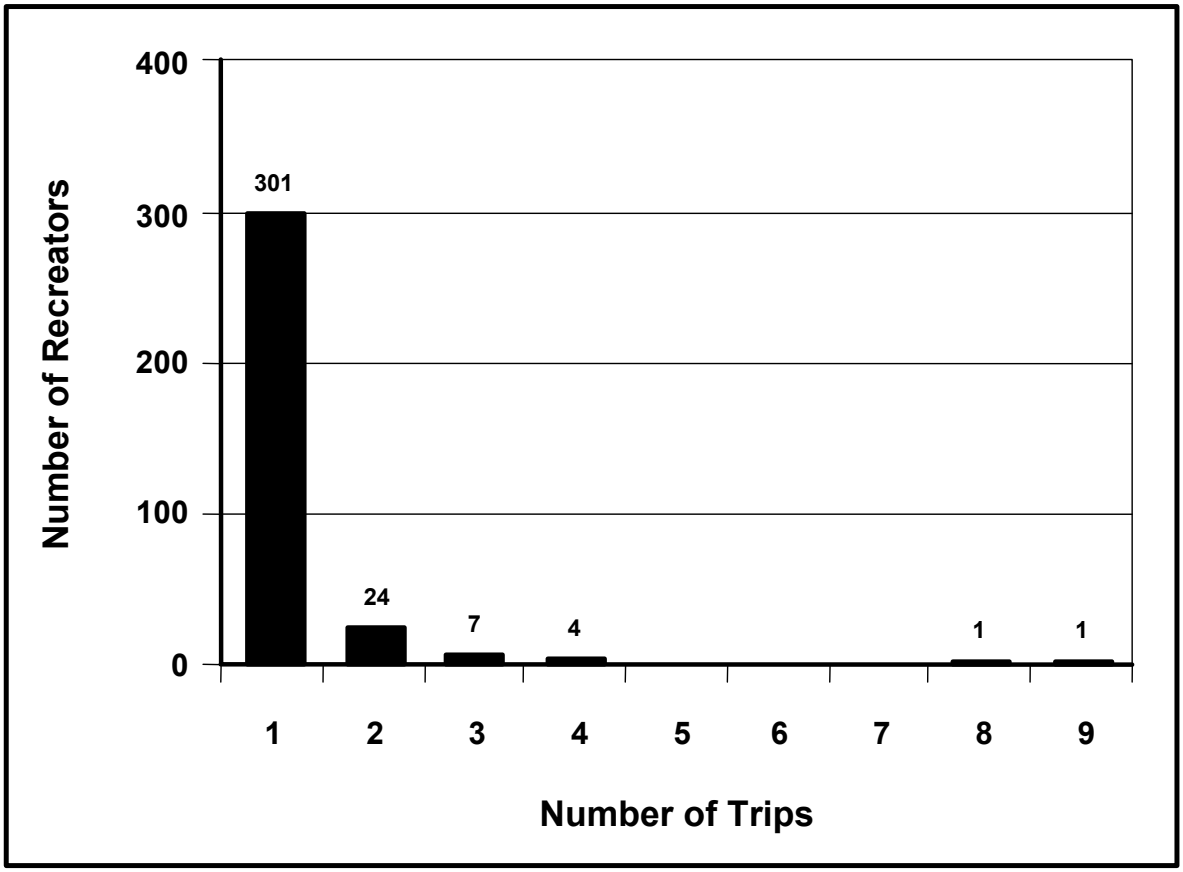
Figure 2
Frequency Distribution of Observed Cars



Source: Table 4.1, TER (2003)